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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,199	02/16/2004	Chien-Sheng Yang	ADTP0086USA	2198
27765	7590	09/22/2005	EXAMINER	
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			DOAN, THERESA T	
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DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/708,199	Applicant(s) YANG, CHIEN-SHENG	
	Examiner Theresa T. Doan	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-15,17 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-15,17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The new ground for rejection is applied to the amended claim 10 because the scopes of the amended claim 10 are changed by incorporating both dependent claims 16 and 18 into the base original claim 10.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Habermehl et al. (U.S Pat. 6,174,820) in view of Lin et al. (U.S Pat. 6,642,593).

Regarding claims 10 and 12, Habermehl (figure 4) discloses a capacitive semiconductor pressure sensor comprising:

- an insulating substrate 12 (column 6, lines 27-28);
- a conductive movable diaphragm 110 (see figure 4, column 13, lines 35-36);
- a supporter positioned on the insulating substrate 12 for fixing two ends of the diaphragm and forming a sealed cavity 68 between the diaphragm 110 and the insulating substrate 12 (column 16, lines 28-40);

a stationary electrode 112 positioned on the insulating substrate 12 and below the diaphragm 110 (column 13, lines 35-37); and

a control circuit 54 electrically connected to the diaphragm 110 and the stationary electrode 112 (column 13, lines 35-42).

Habermehl discloses an insulating substrate 12, but fails to disclose an insulating substrate that selected from the group consisting of glass and quartz.

However, Lin (figure 1h) teaches a substrate 20 can be made of other microwave quality substrate such as a quartz or sapphire substrate (column 2, lines 56-57).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to form a glass substrate or a quartz substrate in Habermehl device because as taught by Lin, such substrate is well known and commonly used in the art for the semiconductor substrate. It is noted that the process limitation recited in claim 12 (forming simultaneously) would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

Regarding claim 13, Habermehl (figures 5g-5i) discloses the supporter comprises polysilicon (column 13, lines 19-28).

Regarding claims 14-15, Habermehl (figures 5g-5i) discloses the diaphragm 110 comprises a doped polysilicon (column 13, lines 25-36).

4. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheiter et al. (U.S Pat. 6,140,689) in view of Lin et al. (U.S Pat. 6,642,593).

Scheiter (figure 2) discloses a capacitive semiconductor pressure sensor comprising:

- an insulating substrate 2 (column 2, lines 50-53);

- a conductive movable diaphragm 7 (see figure 2, column 2, lines 58-60);

- a supporter 4 positioned on the insulating substrate 2 for fixing two ends of the diaphragm and forming a sealed cavity 6 between the diaphragm 7 and the insulating substrate 2 (column 2, lines 55-63 and column 4, lines 53-60);

- a stationary electrode 8 positioned on the insulating substrate 2 and below the diaphragm 7 (column 3, lines 3-15); and

- a control circuit 11 electrically connected to the diaphragm 7 and the stationary electrode 8 (column 3, lines 26-32).

Scheiter discloses an insulating substrate 2, but fails to disclose an insulating substrate that selected from the group consisting of glass and quartz.

However, Lin (figure 1h) teaches a substrate 20 can be made of other microwave quality substrate such as a quartz or sapphire substrate (column 2, lines 56-57).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to form a glass substrate or a quartz substrate in

Scheiter device because as taught by Lin, such substrate is well known and commonly used in the art for the semiconductor substrate. It is noted that the process limitation recited in claim 12 (forming simultaneously) would not carry patentable weight in this

claim drawn to a structure, because distinct structure is not necessarily produced. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

5. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Habermehl et al. (U.S Pat. 6,174,820) in view of Lin et al. (U.S Pat. 6,642,593) as applied to claim 10 above and further in view of Shrauger (U.S 2003/0020094).

Habermehl does not disclose the control circuit being electrically connected to the stationary electrode and the diaphragm via the flexible printed circuit board. However, Shrauger (figure 4) teaches the forming of a plurality electronic components (MEMs) on printed circuit board and being electrically connected to each other. Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to form the control circuit being electrically connected to the stationary electrode and the diaphragm via the flexible printed circuit board in Habermehl's device because as taught by Shrauger, such connection arrangements are well known and commonly used for providing the electrical connections between the electronic components.

6. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheiter et al. (U.S Pat. 6,140,689) in view of Lin et al. (U.S Pat. 6,642,593) as applied to claim 10 above and further in view of Shrauger (U.S 2003/0020094).

Scheiter does not disclose the control circuit being electrically connected to the stationary electrode and the diaphragm via the flexible printed circuit board.

However, Shrauger (figure 4) teaches the forming of a plurality electronic components (MEMs) on printed circuit board and being electrically connected to each other.

Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to form the control circuit being electrically connected to the stationary electrode and the diaphragm via the flexible printed circuit board in Scheiter's device because as taught by Shrauger, such connection arrangements are well known and commonly used for providing the electrical connections between the electronic components.

7. Claims 1, 3, 5-15, 17, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guo et al. (U.S Pat. 6,472,962) in view of Habermehl et al. (U.S Pat. 6,174,820) and Bhattacharyya (U.S Pat. 6,845,034) and further in view Lin et al. (U.S Pat. 6,642,593).

Regarding claims 1, 8-10, 13-15 and 22, Guo (figures 4-5) discloses a capacitive semiconductor pressure sensor comprising:

a non-single-crystal-silicon-based substrate 80 (dielectric material) (column 5, lines 66-67); a conductive movable metal diaphragm 122 (see figure 5, column 6, lines 36-39); a metal supporter 118 positioned on the non-single-crystal-silicon-based substrate 80 for fixing two ends of the metal diaphragm 122 (column 7, lines 13-14) and forming a sealed cavity 123 (column 6, lines 47-50) between the metal diaphragm 122 and the non-single-crystal-silicon-based substrate 80; a stationary electrode 100 (column 6, lines 64-67) positioned on the non-single-crystal-silicon-based substrate 80

and below the metal diaphragm 122, the stationary electrode 100 and the metal diaphragm 122 constituting a plate capacitor (see figure 5, column 6, lines 30-33).

Guo discloses the conductive movable diaphragm and the supporter made of metal, but Guo does not teach a conductive movable diaphragm and a supporter which are made of polysilicon. However, Habermehl (figure 4) discloses that a conductive movable diaphragm 110 and a supporter are made of polysilicon (column 13, lines 19-36). Accordingly, it would have been obvious to form the conductive movable polysilicon diaphragm and the polysilicon supporter because the conductive polysilicon and the conductive metal are equivalent conductive materials, they both have conductivity characteristics, and they are well known and commonly used for providing the electrical connections. And the substitution of art recognized equivalent is within the level of ordinary skill in the art.

Guo does not show a thin film transistor (TFT) control circuit positioned on the non-single-crystal-silicon-based substrate and electrically connected to the plate capacitor. However, Bhattacharyya (figure 41) shows a thin film transistor (TFT) control circuit 1804 positioned on the substrate and electrically connected to the plate capacitor (MEMs) 1830 for detecting a data signal from the MEMs array and passing such data signal to appropriate logic devices and/or data storage devices (column 46, lines 2-6 and column 42, lines 36-52). It would have been obvious to form a thin film transistor on the based substrate and electrically connected to the plate capacitor of MEMs in order to send the data signals to or receive the data signals from logic devices and/or data storage devices, as taught by Bhattacharyya (column 46, lines 2-6).

Guo, Habermehl and Bhattacharyya do not show the non-single crystal silicon based substrate is a glass substrate or a quartz substrate.

However, Lin (figure 1h) teaches a substrate 20 can be made of other microwave quality substrate such as a quartz or sapphire substrate (column 2, lines 56-57). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to form a glass substrate or a quartz substrate in Guo, Habermehl or Bhattacharyya device because as taught by Lin, such substrate is well known and commonly used in the art for the semiconductor substrate.

Regarding claims 6 and 11, Guo discloses wherein the stationary electrode (100/524) comprises aluminum (Al) or titanium (Ti) (column 10, lines 29-30).

Regarding claims 3, 5, 17 and 19, Guo does not disclose the TFT control circuit is a low temperature or a high temperature polysilicon TFT control circuit. It would have been obvious to one of ordinary skill in the art at the time of invention was made to apply the TFT control circuit with a low temperature or a high temperature of polysilicon TFT control circuit in Guo, in order to use the capacitive semiconductor device in a particular application.

Regarding claims 7 and 12, Guo (figures 4-5) discloses wherein the diaphragm 122 and the supporter 118 are formed simultaneously (column 6, lines 38-39). It is note

that the process limitation (simultaneously) would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

8. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guo et al., Habermehl et al., Bhattacharyya and Lin et al., as applied to claim 10 above and further in view of Shrauger (U.S. 2003/0020094).

Guo, Habermehl and Bhattacharyya do not disclose the control circuit being electrically connected to the stationary electrode and the diaphragm via the flexible printed circuit board.

However, Shrauger (figure 4) teaches the forming of a plurality electronic components (MEMs) on printed circuit board and being electrically connected to each other. Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to form the control circuit being electrically connected to the stationary electrode and the diaphragm via the flexible printed circuit board in the above combination device because as taught by Shrauger, such connection arrangements are well known and commonly used for providing the electrical connections between the electronic components.

Response to Arguments

9. With respect to claims 1 and 10, Applicant argues that the prior arts fail to teach an insulating substrate or a non-single-crystal-silicon-based substrate selected from the group consisting of glass and quartz.

This argument is not persuasive because Lin (figure 1h) teaches a substrate 20 can be made of other microwave quality substrate such as a quartz or sapphire substrate (column 2, lines 56-57).

10. With respect to claim 10, Applicant argues that Habermehl and Scheiter fail to show the stationary electrode 40 of the present application is directly positioned on the glass substrate or the quartz substrate 32.

This argument is not persuasive because the features upon which applicant relies (i.e., **directly** positioned on the glass substrate or the quartz substrate 32) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The rest of applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T. Doan whose telephone number is (571) 272-1704. The examiner can normally be reached on Monday to Friday from 7:00AM - 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, WAEL FAHMY can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TD
September 12, 2005.


PHAT X. CAO
PRIMARY EXAMINER